

Groundwater Application Review Summary Form

Application # G- 19441

GW Reviewer Stacey Garrison Date Review Completed: 12/2/2024

Summary of GW Availability and Injury Review:

☒ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☒ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

December 2, 2024

TO: Application G- 19441

FROM: GW: Stacey Garrison
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 12/2/2024
 FROM: Groundwater Section Stacey Garrison
 Reviewer's Name
 SUBJECT: Application G- 19441 Supersedes review of _____
 Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

A. GENERAL INFORMATION: Applicant's Name: Quiet Meadow Farms, LLC County: Linn

A1. Applicant(s) seek(s) 4.3* cfs from 4 well(s) in the Willamette Basin Basin,
Santiam-Calapooia subbasin

*Well-specific maximum rate is reduced from March 1 through April 30, see table under A3.

A2. Proposed use Agricultural Seasonality: Nov 1 to April 30 (freeze protection)

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

POA Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	LINN 62466	1	Alluvial	Nov 1-Feb 28: 4.3 Mar 1-Apr 30: 2.74	10S/2W-17 SW-NW	1440' S, 760' E fr NW cor S 17
2	LINN 62681	3	Alluvial	Nov 1-Feb 28: 4.3 Mar 1-Apr 30: 3.73	10S/2W-17 NW-NW	415' S, 745' E fr NW cor S 17
3	LINN 60537	4	Alluvial	Nov 1-Feb 28: 4.3 Mar 1-Apr 30: 3.41	10S/2W-17 NW-SW	237' S, 487' E fr SW ¼ S 17
4	MARI 68533	5	Alluvial	Nov 1-Feb 28: 4.3 Mar 1-Apr 30: 3.45	10S/2W-17 NW-NE	338' S, 2800' E fr NW cor of S 17 ^a

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	65.5	0 to 18	+2 to 65.5		19.5 to 64	500	Not recorded	Air
2	63	0 to 18	+2 to 60		21 to 60	600	Not recorded	Air
3	60	0 to 18	+1 to 59		32 to 59	600	Not recorded	Air
4	89	0 to 18	+2 to 87		27 to 87	500	Not recorded	Air

Use data from application for proposed wells.

A4. **Comments:** The proposed POAs/POU are approximately 2.4 miles southeast of Jefferson, Oregon. Applicant proposes a maximum rate of 4.3 cfs (~1,930 gpm) from four wells from November 1 through February 28 and at well specific rates from March 1 through April 30: POA 1/Well 1 (LINN 62466) not to exceed 2.74 cfs (1,230 gpm); POA 2/Well 3 (LINN 62681) not to exceed 3.73 cfs (1,674 gpm); POA 3/Well 4 (LINN 60537) not to exceed 3.41 cfs (1,531 gpm); POA 4/Well 5 (MARI 68533) not to exceed 3.45 cfs (1,548 gpm).

POA 1/ Well 1 (LINN 62466) is authorized under Claim GR-1858 at a maximum rate of 0.89 cfs (400 gpm) to irrigate 77.5 ac from March 1 through October 31 and a maximum annual duty of 232.5 AF; POA 1 is also authorized under Claim GR-1859 at a maximum rate of 0.67 cfs (300 gpm) to irrigate 12.5 ac and a maximum annual duty of 37.5 AF. POA 1/ Well 1 (LINN 62466) will therefore be assessed at a **total combined rate of 4.3 cfs (1,930 gpm)** and a **maximum annual volume of 588 AF**.

POA 2/ Well 3 (LINN 62681) is authorized under Permit G-2084/Inchoate T-13212 at a maximum rate of 0.57 cfs (256 gpm) to irrigate 77.5 ac from March 1 through October 31 and a maximum annual duty of 193.8 AF. POA 2/ Well 3 (LINN 62681) will therefore be assessed at a **total combined rate of 4.3 cfs (1,930 gpm)** and a **maximum annual volume of 512 AF**.

POA 3/ Well 4 (LINN 60537) is authorized under Claim GR-917 at a maximum rate of 0.89 cfs (400 gpm) to irrigate 77.5 ac from March 1 through October 31 and a maximum annual duty of 193.8 AF. POA 3/ Well 4 (LINN 60537) will therefore be assessed at a **total combined rate of 4.3 cfs (1,930 gpm)** and a **maximum annual volume of 435 AF**.

POA 4/Well 5 (MARI 68533) is authorized under Permit G-17465 at a maximum rate of 0.85 cfs (382 gpm) to irrigate 68.22 ac from March 1 through October 31 and a maximum annual duty of 170.55 AF. POA 4/Well 5 (MARI 68533) will therefore be assessed at a **total combined rate of 4.3 cfs (1,930 gpm)** and a **maximum annual volume of 488.6 AF**.

^a There is slight discrepancy between the mapped location of the POA as indicated on the applicant's map and the metes-and-bounds description using the Department's PLSS projection. Aerial imagery was used to refine the location; the mapped location is 100 ft south of the used location, and the metes-and-bounds location is 65 ft south of the used location.

- A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☒ **are**, or ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)

Comments: The POAs utilize unconfined alluvium. **POA 3/Well 4 (LINN 60537) is within ¼-mile distance of the banks of a surface water source.** In accordance with OAR 690-502-240, it is presumed the groundwater supplied to POA 3/Well 4 (LINN 60537) is in hydraulic connection with a surface water source **and the relevant basin rules (OAR 690-502-0110) apply to POA 3/Well 4 (LINN 60537).**

POA 1/Well 1 (LINN 62466), POA 2/Well 3 (LINN 62681), and POA 4/Well 5 (MARI 68533) are greater than ¼-mile distance to the nearest surface water source, therefore the relevant basin rules do not apply.

- A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

- B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- ☐ **is** over appropriated, ☒ **is not** over appropriated, or ☐ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- ☐ **will not** or ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- ☒ **will not** or ☐ **will** likely to **be available within the capacity of the groundwater resource**; or
- ☐ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:
 - ☒ The permit should contain condition #(s) 7RLN, (large water use);
 - ☒ The permit should be conditioned as indicated in item 2 below.
 - ☐ The permit should contain special condition(s) as indicated in item 3 below;

- B2.
 - ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
 - ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
 - ☒ **Condition** to allow groundwater production only from the Holocene Alluvium groundwater reservoir ~~between approximately~~ _____ ft. and _____ ft. below land surface;
 - ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** POAs/POU are located on floodplain deposits of the North Santiam River; Missoula Flood deposits are mapped nearby but have likely been re-worked by the river since their deposition (O'Connor et al., 2001). There does not appear to be a laterally continuous confining horizon, ground water elevations approximate the stage of the adjacent reaches of the river, and the alluvial floodplain is unconfined and highly permeable. The floodplain deposits are 60 to 80 ft thick and composed of materials ranging from clays to cobbles (Woodward et al., 1998). A query of wells in the area (see Well Statistics) shows a max of 1,500 gpm and a median of 60 gpm; the proposed rate of 4.3 cfs (1,930 gpm) is 129% of the maximum and more than 32 times the median. Within a mile of the POAs, only two of twenty-nine wells have reported yields greater than 1,000 gpm, LINN 57702 and LINN 62889, but neither of these were as high as the proposed rate of 4.3 cfs (1,930 gpm). These wells have 12-inch casings and LINN 57702 has a 41-ft open interval and LINN 62889 has a 45-ft open interval; the proposed POAs also have 12-inch casings with open intervals ranging from 41 to 69 ft. Although the well logs for the POAs report air test yields of 600 gpm for POAs 2 and 3, and 500 gpm for POAs 1 and 4, air tests tend to be less accurate than pump tests. Considering the similar construction to LINN 57702 and LINN 62889, it is likely that the proposed POAs would be capable of supplying up to 1,400 gpm. However, the proposed maximum rate is 4.3 cfs (1,930 gpm), so **it is not likely that the groundwater resource is capable of supplying the proposed rate***. Water level trends for nearby (0 to 2 miles from POAs) wells that utilize the Holocene alluvial floodplain deposits are stable (see Water Level Measurements in Nearby Wells). The range of groundwater elevations appear to reflect the stage of adjacent reaches of the river. Although there have been notable declines (MARI 19707, LINN 4165), these do not appear to represent the dominant trend. There are 45 water rights on 49 groundwater POAs within one mile of the proposed POAs. Although this is a relatively high concentration of groundwater use, there do not appear to be long-term declines, and this is likely due to the high permeability of the aquifer and strong hydraulic connection with nearby surface water. The groundwater resource is likely not over-appropriated. The closest proposed-POA-to-groundwater-user distance is 306 ft between POA 4/Well 5 (MARI 68533) to LINN 58285, a POA on Inchoate T-11316. It is likely the proposed use would cause some degree of well-to-well interference with LINN 58285. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached **Theis Drawdown Analysis**). Results indicate that the proposed use is not likely to cause well-to-well interference with LINN 58285 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. **Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is not likely available in the amounts requested within the capacity of the resource. If a water right is permitted for this application, the conditions specified in B1.d. and B2.c. are strongly recommended to protect senior users and the groundwater resource.**

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

***The applicant indicates in Section 3 that combined maximum rate is 4.3 cfs among the four wells but does not provide well specific rates in the Section 3 Table. The maximum rate for each well is evaluated at 4.3 cfs, per Section 3, as well-specific rates and volumes are not provided by the applicant. The applicant may revise the maximum well-specific rates in Section 3 to match the maximum reported yields for similarly constructed wells in the area (i.e., up to 1,400 gpm or 3.12 cfs) for the entire period of use with a maximum combined rate among the four wells not to exceed 4.3 cfs to avoid triggering not in capacity of the resource on this basis without the need for a new groundwater review.**

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**C1. 690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Alluvial	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvial	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Alluvial	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Alluvial	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer confinement evaluation: Although static water levels (SWLs) reported in some well logs are above the top of the water-bearing zone (WBZ), there does not appear to be a laterally continuous confining zone and the overlying materials are likely WBZs when the adjacent river stage is higher^a. The POAs produce from the coarse-grained Holocene alluvium (O'Connor et al., 2001; Conlon et al., 2005).

^a Well logs within one mile of POAs: MARI 68533, LINN 60537, LINN 62681, LINN 62466, LINN 4083, LINN 4087, LINN 4167, LINN 4086, MARI 16086, MARI 16089, LINN 4165, LINN 4203, LINN 4163, LINN 4082, LINN 4088, LINN 4084, LINN 3137, LINN 140, LINN 58802, LINN 58274, LINN 58285, LINN 57702, LINN 4166, LINN 4168, LINN 4219, LINN 4221, LINN 62889, LINN 61334, MARI 16091, LINN 55511, LINN 58593

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl ^a	SW Elev ft msl ^b	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interf. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	North Santiam River	225-266	238-257	2,360	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1	North Santiam River	225-266	240-258	1,900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1	North Santiam River	225-266	237-254	1,905	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	1	North Santiam River	225-266	245-270	3,140	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	Unnamed trib to NSR	225-266	241-246	2,450	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	2	Unnamed trib to NSR	225-266	242-246	3,270	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	2	Unnamed trib to NSR	225-266	242-246	1,080	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	2	Unnamed trib to NSR	225-266	242-246	4,708	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Published water table contour maps show that groundwater flows toward and discharges into the North Santiam River (Woodward et al., 1998). The floodplain aquifer and the streambed are largely composed of permeable sands and gravels so groundwater should be able to move freely between the stream and the aquifer.

POA 3/Well 2 (LINN 60537) produces from an unconfined alluvial aquifer and is within ¼-mile distance from SW 2 (Unnamed tributary to North Santiam River); in accordance with OAR 690-009-0040 (2), hydraulic connection is assumed. In addition, because POA 3/Well 2 (LINN 60537) is within a quarter mile of the SW 2 (Unnamed tributary to North Santiam River), the POA would be assumed to have Potential for Substantial Interference (PSI) with SW 1 per OAR 690-009-0040(4)(a), regardless of whether the developed aquifer is confined or unconfined, as in either case it appears to be hydraulically connected to SW 1.

^a Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for: MARI 68533, LINN 60537, LINN 62681, LINN 62466, LINN 4083, LINN 4087, LINN 4167, LINN 4086, MARI 16086, MARI 16089, LINN 4165, LINN 4203, LINN 4163, LINN 4082, LINN 4088, LINN 4084, LINN 3137, LINN 140, LINN 58802, LINN 58274, LINN 58285, LINN 57702, LINN 4166, LINN 4168, LINN 4219, LINN 4221, LINN 62889, LINN 61334, MARI 16091, LINN 55511, LINN 58593

^b Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

Water Availability Basin the well(s) are located within: N SANTIAM R>SANTIAM R-AT MOUTH

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the

requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141A	430	<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141A	430	<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141A	430	<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
4	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141A	430	<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>
3	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input checked="" type="checkbox"/>
4	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	1380	<input type="checkbox"/>	<25%	<input type="checkbox"/>

Comments: POA 3/Well 4 (LINN 60537) has hydraulic connection to and is within a quarter mile of SW 2 (Unnamed tributary to North Santiam River), therefore the POA has the Potential for Substantial Interference (PSI) with SW 2 per OAR 690-009-0040(4)(a).

Potential depletion (interference with) SW 1 (North Santiam River) and SW 2 (Unnamed tributary to North Santiam River) by proposed pumping at POA 3/Well 4 (LINN 60537) was estimated using Hunt 1999 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; Conlon et al., 2003, 2005; Iverson, 2002; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). See attached "Stream Depletion Analysis" for the specific parameters used in the analysis. The Hunt 1999 analytical model results indicate that depletion of (interference with) SW 1 (North Santiam River) and SW 2 (Unnamed tributary to North Santiam River) due to pumping of POA 3/Well 4 (LINN 60537) is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping.

Because only the distance is expected to vary between the POA and surface water sources, only the POA with the shortest distance (in this case, POA 3) was analyzed quantitatively for interference (stream depletion). All other POAs would presumably result in less interference due to their greater separation relative to POA 3. Therefore, the interference of all proposed POAs with all surface water sources within 1 mile are anticipated to result in much less than 25 percent of the well discharge at 30 days of continuous pumping.

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: N/A, Q is not distributed among wells.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: N/A, surface water sources within 1 mile evaluated above.

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

- C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** **POA 3/Well 4 (LINN 60537) has hydraulic connection to and is within a quarter mile of SW 2 (Unnamed tributary to North Santiam River), therefore the POA has the Potential for Substantial Interference (PSI) with SW 2 per OAR 690-009-0040(4)(a).**

References Used: _____

Application File: G-19441

Pumping Test Files: MARI 16277, MARI 50649, LINN 344, MARI 16029, MARI 16278, MARI 16286

Well Reports: MARI 68533, LINN 60537, LINN 62681, LINN 62466, LINN 4083, LINN 4087, LINN 4167, LINN 4086, MARI 16086, MARI 16089, LINN 4165, LINN 4203, LINN 4163, LINN 4082, LINN 4088, LINN 4084, LINN 3137, LINN 140, LINN 58802, LINN 58274, LINN 58285, LINN 57702, LINN 4166, LINN 4168, LINN 4219, LINN 4221, LINN 62889, LINN 61334, MARI 16091, LINN 55511, LINN 58593

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005. Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M.W. and Caldwell, R., 1998. Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

Heath, R.C. 1983, Basic ground-water hydrology. U.S. Geological Survey Water Supply Paper 2220, 86 p.

Herrera, N.B., Burns, E.R., and Conlon, T.D., 2014, Simulation of groundwater flow and the interaction of groundwater and surface water in the Willamette Basin and Central Willamette subbasin, Oregon: U.S. Geological Survey Scientific Investigations Report 2014-5136, 152 p.

Morris, D.A., and Johnson, A.I., 1967, Summary of hydrologic and physical properties of rock and soil materials, as analyzed by the hydrologic laboratory of the U.S. Geological Survey 1948-60. U.S. Geological Survey Water Supply Paper 1839-D, 42 p.

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D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: Logid:

D2. THE WELL does not appear to meet current well construction standards based upon:

a. review of the well log;

b. field inspection by ;


c. report of CWRE ;

d. other: (specify) ;

D3. THE WELL construction deficiency or other comment is described as follows:

D4. Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables



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N SANTIAM R > SANTIAM R - AT MOUTH

WILLAMETTE BASIN

Water Availability as of 11/20/2024

Watershed ID #: 141 [\(Map\)](#)

Date: 11/20/2024

Exceedance Level: 80%
Time: 10:32 AM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second

Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirements	Net Water Available
JAN	2,330.00	402.00	1,850.00	0.00	1,200.00	648.00
FEB	2,670.00	1,490.00	1,180.00	0.00	1,200.00	-213.00
MAR	2,540.00	1,320.00	1,220.00	0.00	1,200.00	20.00
APR	2,500.00	1,480.00	1,020.00	0.00	1,200.00	-183.00
MAY	2,590.00	804.00	1,790.00	0.00	1,200.00	586.00
JUN	1,500.00	434.00	1,070.00	0.00	800.00	266.00
JUL	858.00	331.00	527.00	0.00	800.00	-273.00
AUG	661.00	317.00	344.00	0.00	775.00	-431.00
SEP	627.00	295.00	332.00	0.00	778.00	-446.00
OCT	694.00	266.00	428.00	0.00	922.00	-494.00
NOV	1,380.00	269.00	1,110.00	0.00	1,200.00	-88.50
DEC	2,540.00	269.00	2,270.00	0.00	1,200.00	1,070.00
ANN	1,960,000.00	464,000.00	1,500,000.00	0.00	753,000.00	801,000.00



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N SANTIAM R > SANTIAM R - AT MOUTH

WILLAMETTE BASIN

Water Availability as of 11/20/2024

Watershed ID #: 141 [\(Map\)](#)

Date: 11/20/2024

Exceedance Level: 80%
Time: 3:20 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Detailed Report of Instream Flow Requirements

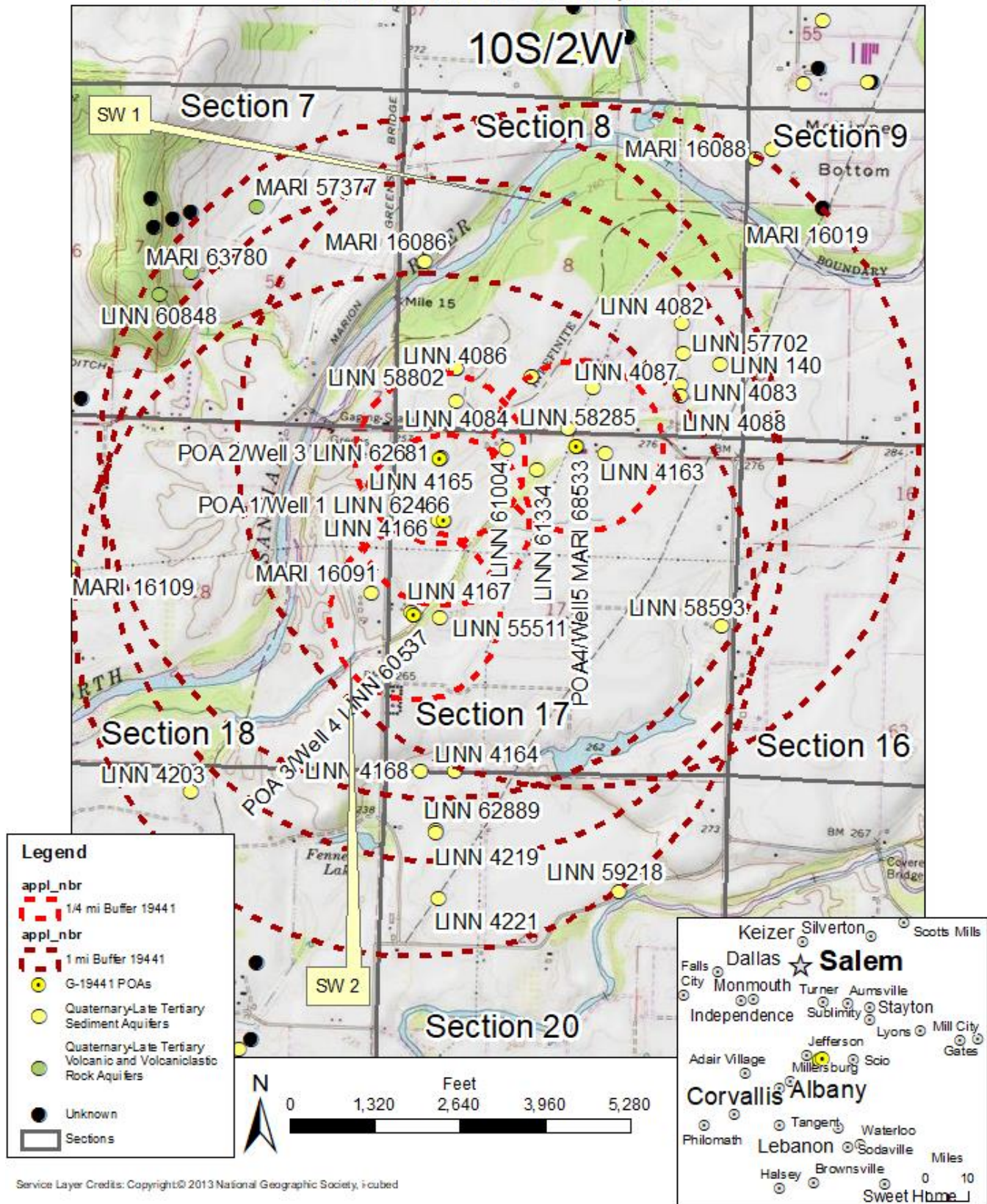
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF141A	APPLICATION	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00
IS89697A	APPLICATION	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	800.00	800.00	775.00	778.00	922.00	1,200.00	1,200.00
Maximum		1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	800.00	800.00	775.00	778.00	922.00	1,200.00	1,200.00

Well Location Map

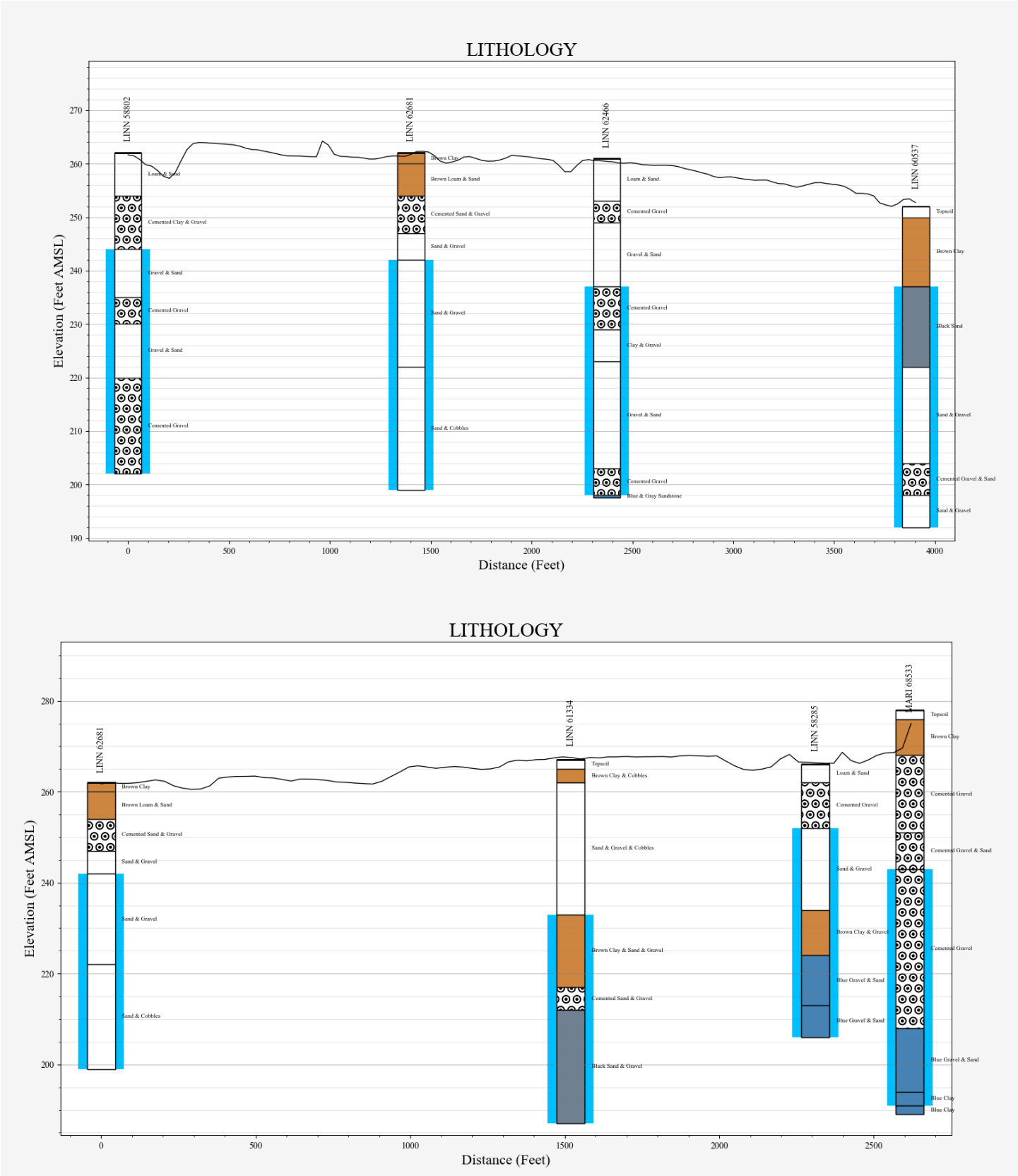
G-19441

Quiet Meadows Farms, LLC

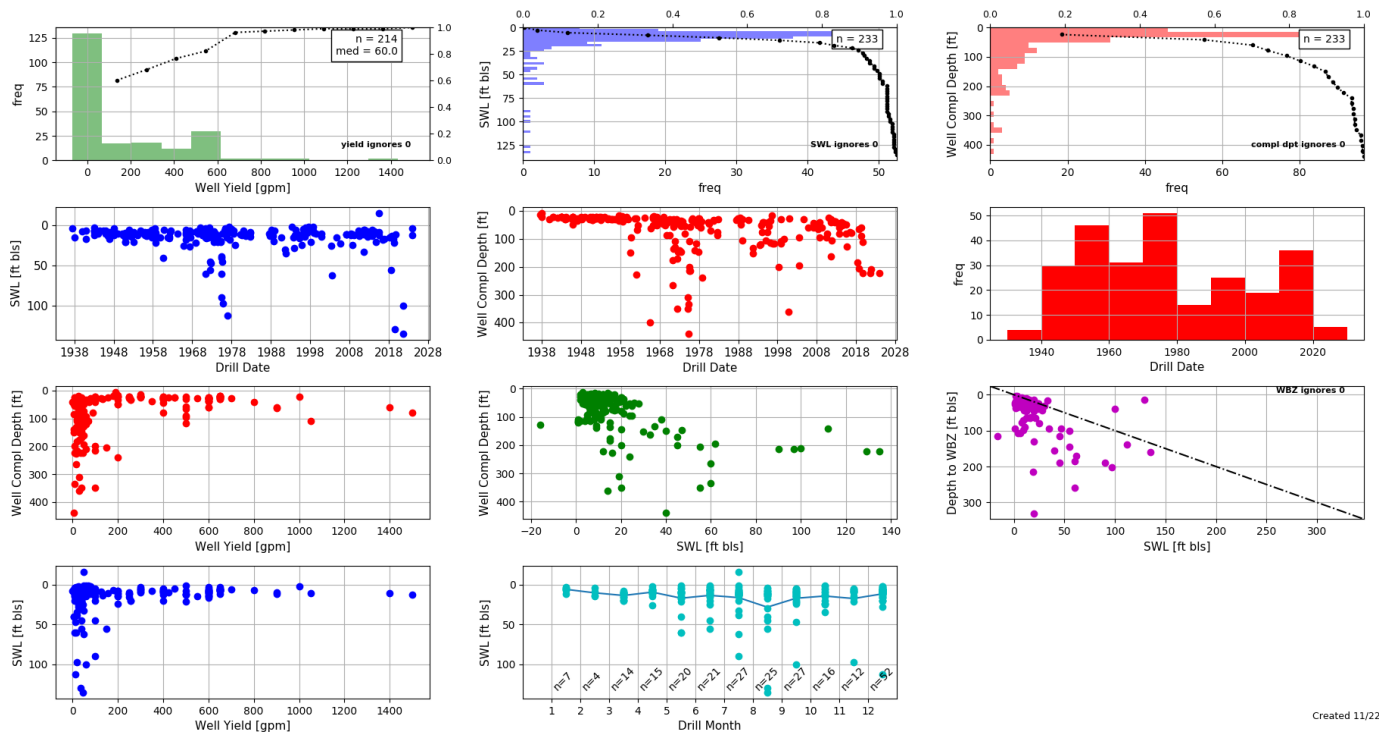


Service Layer Credits: Copyright© 2013 National Geographic Society, Inc.

Cross-Section

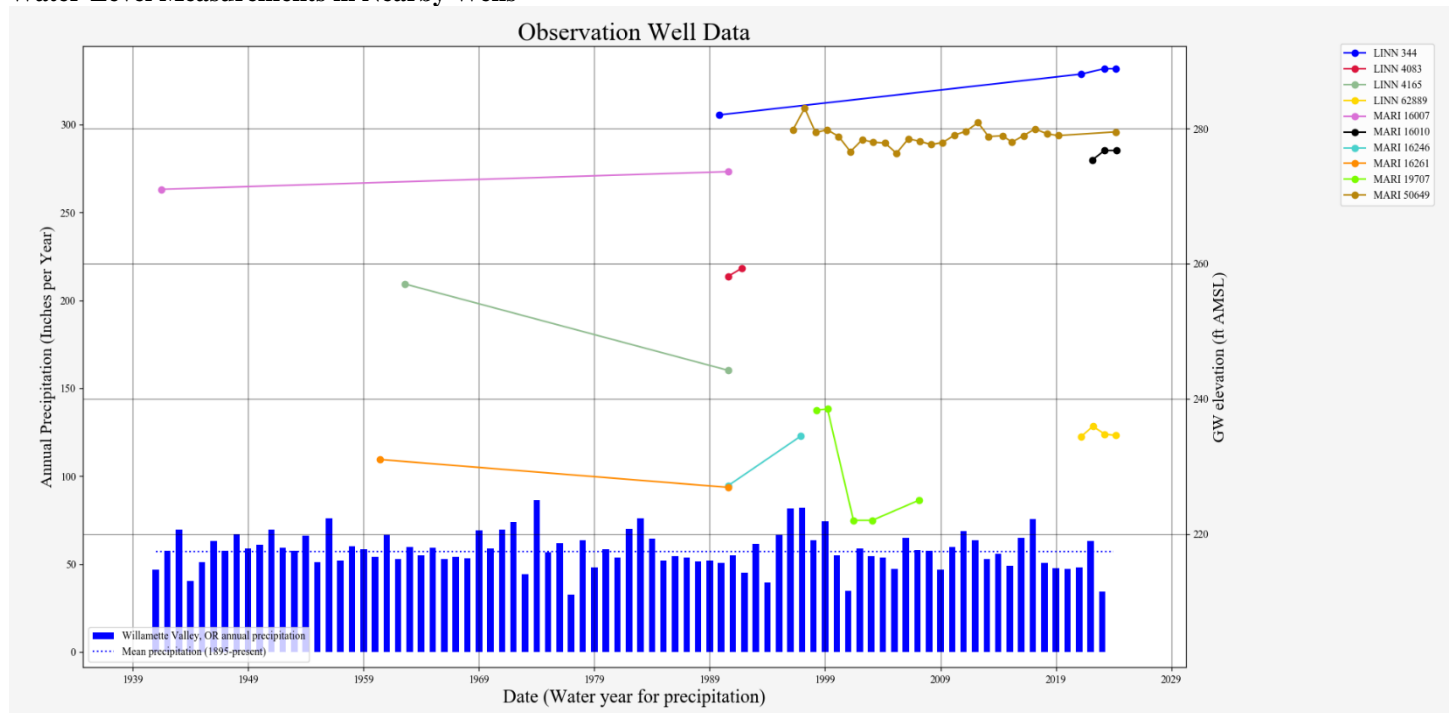


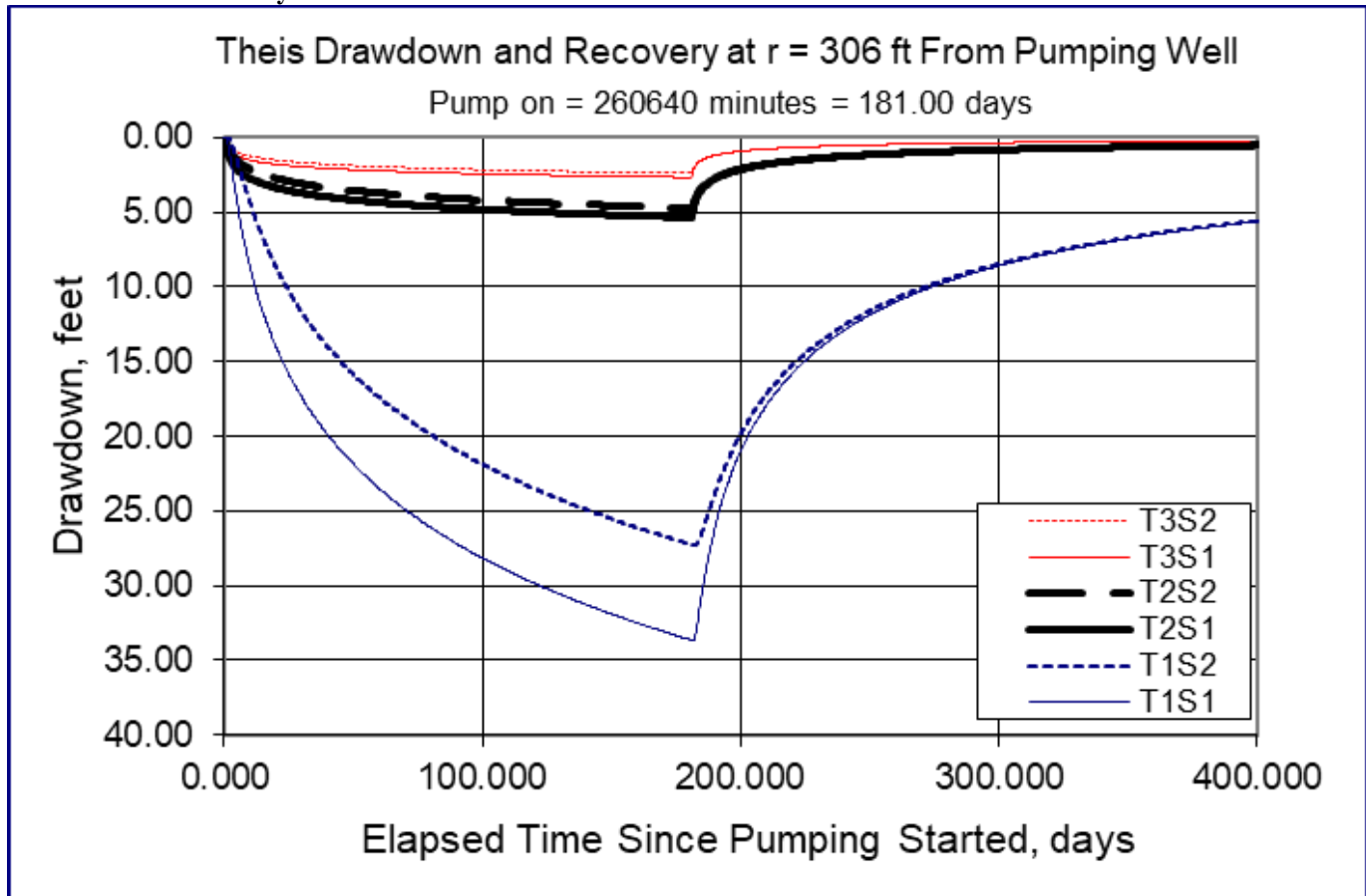
Well Statistics



Created 11/22/2024

Water-Level Measurements in Nearby Wells



Theis Interference Analysis

Radial distance from pumping well (r)=306 ft [estimated radial distance to nearest groundwater user, LINN 58285]

Pumping Rate (Q)= 1.637849 cfs (~735 gpm)*

Aquifer Transmissivity (T1)= 8,901 gpd/ft (1,190 ft²/day), (T2)= 92,153 gpd/ft (12,320 ft²/day), (T3)= 209,440 gpd/ft (28,000 ft²/day)
Storativity (s1) = 0.15, (s2) = 0.3 [Conlon et al 2005, Table 1 values for USU; specific yield values for gravel and sand-Heath, 1983 and Morris & Johnson 1967]

Total pumping time=181 days

*The full pumping rate could not be utilized continuously for the entire 181-day period of use without exceeding the 588 ac-ft maximum allowed duty. For the maximum allowed duty of 588 ac-ft, continuous pumping would occur for 181 days at a rate of 1.637849 cfs (~735 gpm).

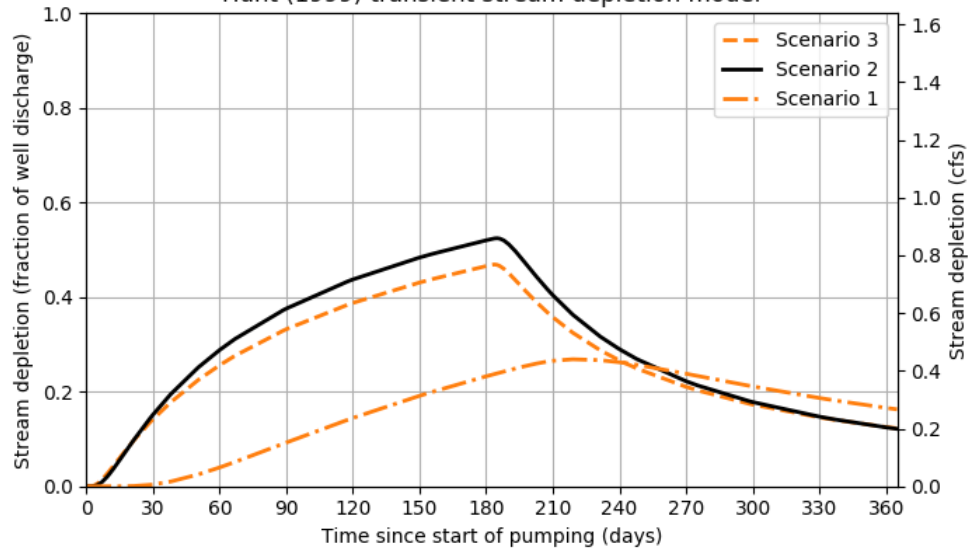
Stream Depletion (Hunt) Model Analysis

		Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Application type:	G	Distance from well to stream	a	1905	1905	1905	ft
Application number:	19941	Aquifer transmissivity	T	1200.0	12300.0	28000.0	ft ² /day
Well number:	3	Aquifer storativity	S	0.15	0.2	0.3	-
Stream Number:	1	Aquitard vertical hydraulic conductivity	Kva	0.01	0.01	0.01	ft/day
Pumping rate (cfs):	1.637849	Not used		10.0	20.0	30.0	
Pumping duration (days):	181.0	Aquitard thickness below stream	babs	0.1	0.1	0.1	ft
Pumping start month number (3=March)	11.0	Not used		0.2	0.2	0.2	
Plotting duration (days)	365	Stream width	ws	200	200	200	ft

Stream depletion for Scenario 2:

Days	10	90	120	150	180	210	240	270	300	330	360	30	60
Depletion (%)	2	38	44	48	52	40	29	22	18	15	12	15	29
Depletion (cfs)	0.04	0.62	0.72	0.79	0.85	0.66	0.47	0.36	0.29	0.24	0.20	0.25	0.47

Hunt (1999) transient stream depletion model



Application type:	G	Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Application number:	19941	Distance from well to stream	a	1080.0	1080.0	1080.0	ft
Well number:	3	Aquifer transmissivity	T	1200.0	12300.0	28000.0	ft ² /day
Stream Number:	2	Aquifer storativity	S	0.15	0.2	0.3	-
Pumping rate (cfs):	1.637849	Aquitard vertical hydraulic conductivity	Kva	0.01	0.01	0.01	ft/day
Pumping duration (days):	181.0	Not used		10.0	20.0	30.0	
Pumping start month number (3=March)	11.0	Aquitard thickness below stream	babs	5	5	5	ft
Plotting duration (days)	365	Not used		0.2	0.2	0.2	
		Stream width	ws	50.0	50.0	50.0	ft

Stream depletion for Scenario 2:

Days	10	90	120	150	180	210	240	270	300	330	360	30	60
Depletion (%)	0	1	1	1	1	1	1	1	1	1	0	1	
Depletion (cfs)	0.00	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.01

Hunt (1999) transient stream depletion model

